General

Guideline Title

Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer: U.S. Preventive Services Task Force recommendation statement.

Bibliographic Source(s)

U.S. Preventive Services Task Force. Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2016 Jun 21;164(12):836-45. [38 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates previous versions: U.S. Preventive Services Task Force. Aspirin for the prevention of cardiovascular disease: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2009 Mar 17;150(6):396-404.

U.S. Preventive Services Task Force. Routine aspirin or nonsteroidal anti-inflammatory drugs for the primary prevention of colorectal cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2007 Mar 6;146(5):361-4. [33 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations (A, B, C, D, or I) and identifies the Levels of Certainty Regarding Net Benefit (High, Moderate, and Low). The definitions of these grades can be found at the end of the "Major Recommendations" field.

Summary of Recommendation and Evidence

The USPSTF recommends initiating low-dose aspirin use for the primary prevention of cardiovascular disease (CVD) and colorectal cancer (CRC) in adults aged 50 to 59 years who have a 10% or greater 10-year CVD risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years. (B recommendation)

The decision to initiate low-dose aspirin use for the primary prevention of CVD and CRC in adults aged 60 to 69 years who have a 10% or greater 10-year CVD risk should be an individual one. Persons who are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years are more likely to benefit. Persons who place a higher value on the potential benefits than the potential harms may choose to initiate low-dose aspirin. (C recommendation)

The current evidence is insufficient to assess the balance of benefits and harms of initiating aspirin use for the primary prevention of CVD and CRC

in adults younger than 50 years. (I statement)

The current evidence is insufficient to assess the balance of benefits and harms of initiating aspirin use for the primary prevention of CVD and CRC in adults aged 70 years or older. (I statement)

Clinical Considerations

Patient Population Under Consideration

This recommendation applies to adults aged 40 years or older without known CVD (including history of myocardial infarction [MI] or stroke) and without increased bleeding risk (for example, history of gastrointestinal [GI] ulcers, recent bleeding, or use of medications that increase bleeding risk).

Assessment of the Balance of Benefits and Harms

The magnitude of the health benefits of aspirin use depends on an individual's baseline CVD risk and willingness to take aspirin for a sufficient duration to obtain the benefit of reduced incidence of CRC. The magnitude of harms depends on the presence of risk factors for bleeding.

Baseline CVD Risk

The magnitude of the cardiovascular risk reduction with aspirin use depends on an individual's initial risk for CVD events. Risk assessment for CVD should include ascertainment of the following risk factors: age, sex, race/ethnicity, total cholesterol level, high-density lipoprotein cholesterol level, systolic blood pressure, hypertension treatment, diabetes, and smoking. An online version of the American College of Cardiology (ACC)/American Heart Association (AHA) risk calculator can be found at http://tools.acc.org/ASCVD-Risk-Estimator/ .

CRC Prevention

Colorectal cancer prevention plays an important role in the overall health benefit of aspirin, but this benefit is not apparent until 10 years after aspirin therapy is started. Patients need to take aspirin for at least 5 to 10 years to realize this potential benefit, and persons with shorter life expectancy are less likely to benefit. Thus, aspirin use is more likely to have an effect when it is started between the ages of 50 and 59 years. Because of the time required before a reduced incidence in CRC is seen, older persons (that is, 60 years or older) are less likely to realize this benefit than adults aged 50 to 59 years.

GI and Intracranial Bleeding

Evidence shows that risk for GI bleeding, with and without aspirin use, increases with age. For this recommendation, the USPSTF considered older age and male sex to be important risk factors for GI bleeding. Other risk factors include upper GI tract pain, GI ulcers, concurrent anticoagulation or nonsteroidal anti-inflammatory drug (NSAID) use, and uncontrolled hypertension. NSAID therapy combined with aspirin use increases the risk for serious GI bleeding compared with aspirin use alone. The rate of serious bleeding among aspirin users is about 2 to 3 times greater in patients with a history of GI ulcer. The risk for serious GI bleeding is 2 times greater in men than in women. These risk factors substantially increase the risk for bleeding and should be considered in the overall decision about whether to start or continue aspirin therapy. There is no evidence that enteric-coated or buffered formulations reduce the risk for serious GI bleeding.

Balance of Benefits and Harms

The USPSTF used a CVD microsimulation model to estimate cardiovascular event rates based on baseline risk factors and aspirin use. It used the AHA/ACC risk calculator to stratify findings of benefits and harms by 10-year CVD risk. The USPSTF also calculated estimates of CRC incidence and harms of bleeding to determine the net balance of benefits and harms across individuals with varying baseline CVD risk.

The table in the original guideline document presents the USPSTF's estimated lifetime number of nonfatal MIs, ischemic strokes, and cases of CRC prevented, stratified by 10-year CVD risk level, age, and sex, among adults aged 50 to 69 years (the age range with evidence of net benefit from aspirin use). In addition, the table presents the USPSTF's estimated lifetime number of GI bleeding events and hemorrhagic strokes. The USPSTF developed these estimates assuming that aspirin users are not taking NSAIDs and do not have other conditions that increase risk for GI bleeding. The USPSTF estimated life-years and quality-adjusted life-years (QALYs) saved as one part of its consideration of the balance of benefits and harms of these disparate clinical outcomes (see the "Implementation" section in the original guideline document for more information on interpreting the results in the table).

Overall, the USPSTF determined that the greatest net benefit to be gained is by adults aged 50 to 59 years whose 10-year CVD risk is 10% or greater. The USPSTF recommends that persons in this age and risk group start taking aspirin. Adults aged 60 to 69 years may also benefit from

starting aspirin use, although the net benefit is smaller due to the increased risk for GI bleeding and decreased benefit in CRC prevention in this age group.

Further, the decision about the level of CVD risk at which the potential benefits outweigh potential harms is an individual one. Some adults may decide that avoiding an MI or a stroke is very important and that having a GI bleeding event is not as significant. They may decide to take aspirin at a lower CVD risk level than those who are more concerned about GI bleeding. Adults who have a high likelihood of benefit with little potential for harm should be encouraged to consider aspirin use. Conversely, adults who have little potential for benefit or are at high risk for GI bleeding should be discouraged from it.

Treatment and Dosage

The optimal dose of aspirin to prevent CVD events is not known. Primary prevention trials have demonstrated benefits with various regimens, including doses of 75 and 100 mg per day and 100 and 325 mg every other day. A dose of 75 mg per day seems as effective as higher doses. The risk for GI bleeding may increase with the dosage. A pragmatic approach consistent with the evidence is to prescribe 81 mg per day, which is the most commonly prescribed dose in the United States.

Although the optimal timing and frequency of discussions about aspirin therapy are unknown, a reasonable approach may be to assess CVD and bleeding risk factors starting at age 50 years and periodically thereafter, as well as when CVD and bleeding risk factors are first detected or change.

Suggestions for Practice Regarding the I Statements

Potential Preventable Burden

Evidence from primary prevention trials on the benefits of initiating aspirin use in adults younger than 50 years is limited. The potential benefit is probably lower than in adults aged 50 to 69 years because the risk for CVD events is lower (only a small percentage of adults younger than 50 years have a 10-year CVD risk ≥10%). Adults younger than 50 years who have an increased 10-year CVD risk may gain significant benefit from aspirin use; how much benefit is uncertain. Evidence on the benefits and harms of initiating aspirin use in older adults is limited. Many adults aged 70 years or older are at increased risk for CVD because of their age. They have a high incidence of MI and stroke; thus, the potential benefit of aspirin could be substantial.

Potential Harms

The relationship between older age and GI bleeding is well-established; thus, the potential harms for adults older than 70 years are significant. The complexity of risk factors, medication use, and concomitant illness make it difficult to assess the balance of benefits and harms of initiating aspirin use in this age group. In addition, aspirin use in adults older than 70 years results in smaller reductions in the incidence of CRC compared with younger adults.

Current Practice

Nearly 40% of U.S. adults older than 50 years use aspirin for the primary or secondary prevention of CVD. A study of National Health and Nutrition Examination Survey data assessed how common aspirin use is for the primary prevention of CVD and whether physicians recommend it or patients start it on their own. Among patients who were eligible for aspirin therapy and were at increased CHD risk (>10% 10-year risk), about 41% were told by a physician to take aspirin. Among patients aged 65 years or older who were told by a physician to take aspirin, 80% adhered to the recommendation.

Useful Resources

The USPSTF has made other recommendations on CVD prevention, including smoking cessation and promoting a healthful diet and physical activity, as well as screening for carotid artery stenosis, coronary heart disease (CHD), high blood pressure, lipid disorders, obesity, diabetes, and peripheral artery disease. In addition, it has made recommendations on screening for CRC. These recommendations are available on the USPSTF Web site (www.uspreventiveservicestaskforce.org/).

Additional Approaches to Prevention

Million Hearts (millionhearts.hhs.gov) is a national initiative to prevent 1 million heart attacks and strokes by 2017. It aims to prevent heart disease and stroke by improving access to effective care, improving the quality of care for the "ABCS" (aspirin when appropriate, blood pressure control, cholesterol management, and smoking cessation), focusing clinical attention on the prevention of heart attack and stroke, and activating the public to lead a heart-healthy lifestyle.

The Community Preventive Services Task Force recommends several intervention strategies to prevent CVD for communities and health care organizations (available at www.thecommunityguide.org/cvd/). For health care systems, it recommends introducing clinical decision-support systems to implement clinical guidelines at the point of care. For insurers and payers, it recommends reducing out-of-pocket costs to patients for medications to control high blood pressure and high cholesterol. For clinicians and health care organizations, it recommends incorporating multidisciplinary team-based care to improve blood pressure control, including patients, primary care providers, and other professionals (such as nurses, pharmacists, dietitians, social workers, and community health workers).

Definitions

What the USPSTF Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate, or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined.	Read the "Clinical Considerations" section of the USPSTF Recommendation Statement (see the "Major Recommendations" field). If offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as: • The number, size, or quality of individual studies • Inconsistency of findings across individual studies • Limited generalizability of findings to routine primary care practice • Lack of coherence in the chain of evidence As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: • The limited number or size of studies • Important flaws in study design or methods • Inconsistency of findings across individual studies • Gaps in the chain of evidence

Level of Certainty	Description
	• Findings not generalizable to routine primary care practice • A lack of information on important health outcomes
	More information may allow an estimation of effects on health outcomes.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

- Cardiovascular disease
- Colorectal cancer

Guideline Category

Prevention

Risk Assessment

Clinical Specialty

Cardiology

Family Practice

Internal Medicine

Oncology

Preventive Medicine

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To update the 2009 U.S. Preventive Services Task Force (USPSTF) recommendation on aspirin use to prevent cardiovascular disease (CVD) events and the 2007 recommendation on aspirin and nonsteroidal anti-inflammatory drug use to prevent colorectal cancer (CRC)

Target Population

Adults aged 40 years or older without known cardiovascular disease (CVD) (including history of myocardial infarction [MI] or stroke) and without increased bleeding risk (for example, history of gastrointestinal [GI] ulcers, recent bleeding, or use of medications that increase bleeding risk)

Interventions and Practices Considered

Aspirin prophylaxis

Major Outcomes Considered

Aspirin for the Primary Prevention of Cardiovascular Events

- Key Question 1: Does regular aspirin use in patients without known cardiovascular disease (CVD) reduce myocardial infarction (MI), stroke, death from MI or stroke, or all-cause mortality?
    a. Does the effect vary between a priori subgroups: age, sex, smoking status, race/ethnicity, 10-year cardiovascular risk, or related risk conditions (e.g., diabetes mellitus, decreased ankle brachial index, or elevated blood pressure)?
    b. Does the effect vary by dose, formulation (i.e., enteric-coated), or duration of use?
- Key Question 2: Does regular aspirin use increase gastrointestinal bleeding, hemorrhagic stroke, or other serious harms (e.g., age-related macular degeneration)?
    a. Does the effect vary between a priori subgroups: age, sex, smoking status, race/ethnicity, 10-year cardiovascular risk, related risk conditions (e.g., diabetes mellitus, decreased ankle brachial index, or elevated blood pressure), gastrointestinal bleeding or hemorrhagic stroke risk factors (including a history of gastrointestinal bleeding, ulcers, or nonsteroidal anti-inflammatory drug [NSAID] use), or concomitant medication use (NSAIDs, selective serotonin reuptake inhibitors [SSRIs], or proton-pump inhibitors [PPIs])?
    b. Does the effect vary by dose, formulation, or duration of use?

Aspirin Use in Adults: Cancer, All-Cause Mortality, and Harms

- Key Question 1: Does regular aspirin use reduce total cancer mortality or all-cause mortality in adults taking (or eligible for) aspirin for primary prevention?
    a. Does the effect of aspirin vary by a priori subgroups: age, sex, race/ethnicity, baseline cancer risk,* and comorbidities†?
    b. Does the effect of aspirin vary by delivery of intervention (e.g., dose, frequency, duration, formulation, and recency of use)?
- Key Question 2: Does regular aspirin use reduce the incidence of cancers in adults taking (or eligible for) aspirin for primary prevention?
    a. Does the effect of aspirin vary by a priori subgroups: age, sex, race/ethnicity, baseline cancer risk,* and comorbidities†?
    b. Does the effect of aspirin vary by delivery of intervention (e.g., dose, frequency, duration, formulation, and recency of use)?
- Key Question 6: What are the serious harms of regular aspirin use for the primary prevention of cancer (i.e., at the dosage and duration required to achieve a preventive health effect) in adults appropriate for aspirin chemoprevention?
    a. Does the effect of aspirin vary by a priori subgroups: age, sex, race/ethnicity, baseline cancer risk,* comorbidities,† and concomitant medication use?
    b. Does the effect of aspirin vary by delivery of intervention (e.g., dose, frequency, duration, formulation, and recency of use)?

*Baseline cancer risk includes family history and potentially other cancer risk factors if specified in the literature.

†The authors of the evidence synthesis (see the "Availability of Companion Documents" field) considered the following comorbid conditions, which are prevalent and/or may be differentially affected by aspirin use in terms of benefits or harms: diabetes, liver disease, ulcer disease, and previous gastrointestinal bleeding.

Aspirin Use for the Prevention of Colorectal Cancer

- Key Question 1/3: Does regular aspirin use reduce colorectal cancer (CRC) mortality or all-cause mortality?
    a. Does the effect of aspirin vary by age, sex, race, comorbidities, or baseline cancer risk?
    b. Does the effect of aspirin vary by frequency, dosage, duration, or recency of use?
- Key Question 4: Does regular aspirin use reduce the incidence of CRC?
    a. Does the effect of aspirin vary by age, sex, race, comorbidities, or baseline cancer risk?
    b. Does the effect of aspirin vary by frequency, dosage, duration, or recency of use?
- Key Question 5: Does regular aspirin use reduce the incidence of colorectal adenoma?
    a. Does the effect of aspirin vary by age, sex, race, comorbidities, or baseline cancer risk?

    b. Does the effect of aspirin vary by frequency, dosage, duration, or recency of use?
- Key Question 7: What are the harms of regular aspirin use for the prevention of CRC (at the dosage and duration required to achieve a preventive health effect)?
    a. Do harms vary by patient characteristics (e.g., age, sex, race, comorbidities, or concomitant medication use)?

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): Systematic evidence reviews were prepared by the Kaiser Permanente Research Affiliates Evidence-based Practice Center for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Aspirin for the Primary Prevention of Cardiovascular Events

Data Sources and Searches

The reviewers searched MEDLINE, PubMed, and the Cochrane Central Register of Controlled Trials from January 2008 to January 2015, which was supplemented by checking reference lists from relevant systematic reviews.

Study Selection

Two reviewers independently reviewed 3396 citations and 65 full-text articles against a priori inclusion criteria (see Appendix Figure 2 in the systematic review [see the "Availability of Companion Documents" field]). They included randomized, controlled trials (RCTs) and controlled clinical trials that examined the primary prevention of cardiovascular disease (CVD) with oral aspirin (a minimum of 75 mg every other day for 1 year or more) compared with placebo or no treatment in adults aged 40 years or older. The reviewers excluded interventions that included nonaspirin antithrombotic medications or aspirin as cotreatment with another active intervention. For multifactorial trials, they combined groups in which no evidence of interaction was found and excluded cotreatment groups.

Aspirin Use in Adults: Cancer, All-Cause Mortality, and Harms

Data Sources and Searches

The investigators reviewed all included and excluded studies in 4 relevant systematic reviews on aspirin-associated bleeding events and the 2 previous and updated USPSTF reviews to identify relevant literature. They supplemented this with newly identified studies found on PubMed, MEDLINE, and the Cochrane Central Registry of Controlled Trials from 1 January 2010 to 6 January 2015.

Study Selection

Two investigators independently reviewed abstracts and full-text articles against prespecified criteria. They included trials and large longitudinal cohort studies conducted in adults with a mean age of 40 years or older that evaluated regular oral aspirin use (≥75 mg at least every other day) for 1 year or longer for any indication compared with no treatment or placebo. The investigators required studies to report major gastrointestinal (GI) or intracranial bleeding. Major GI bleeding included cases leading to death, those requiring hospitalization or transfusion, or those described by the trial investigator as serious. Intracranial bleeding included hemorrhagic stroke and intracerebral, subdural, and subarachnoid hemorrhage.

Aspirin Use for the Prevention of Colorectal Cancer

Data Sources and Searches

The reviewers conducted separate literature searches for total cancer and colorectal cancer (CRC) but used similar methods. For total cancer, they based their review on 2 individual-patient data (IPD) meta-analyses of RCTs published through 2010 and 2011 that examined the effects of daily aspirin on cancer incidence and/or mortality. The reviewers supplemented these reviews through a comprehensive bridge search of PubMed, MEDLINE, and the Cochrane Central Register of Controlled Trials (1 January 2011 to 6 January 2015). They also reviewed bibliographies of previous and concurrent USPSTF reviews and other recent relevant reviews. For CRC, they assessed all studies from the previous USPSTF review, performed a comprehensive search using the databases listed earlier from 1 January 2004 to 6 January 2015, and examined reference lists of relevant literature.

Study Selection

Total Cancer

Pairs of investigators independently reviewed titles, abstracts, and full-text articles of studies against prespecified criteria. The investigators included RCTs and controlled clinical trials conducted in adults (aged ≥40 years) that compared regular oral aspirin use (≥75 mg at least every other day) versus placebo or no treatment for at least 1 year for any indication. They excluded randomized groups that included other antithrombotic or chemopreventive agents and trials in adults with a personal history of cancer or a high prevalence of familial cancer syndromes (such as Lynch syndrome). They limited the review to fair- and good-quality trials published in English and conducted in countries with a "very high" Human Development Index in 2013. They included 1 IPD meta-analysis that included studies of less than 1 year of aspirin use because it reported outcomes (time-to-event and individual cancer types) not available from reports of individual trials.

CRC

Inclusion and exclusion criteria were similar to those in the total cancer review with a few exceptions: The reviewers included prospective cohort studies in the full report (not reported here because they did not alter conclusions), they did not exclude studies of patients with prior cancer types other than CRC, they did not exclude randomization groups that included other antithrombotic agents, and they did not restrict by country.

Number of Source Documents

Aspirin for the Primary Prevention of Cardiovascular Events

See the literature search flow diagram (Appendix Figure 2) in the systematic review (see the "Availability of Companion Documents" field) for a summary of evidence search and selection.

Articles included for Key Questions:

- Key Question 1: 11 trials (28 articles)
- Key Question 2: 10 trials (27 articles)

Aspirin Use in Adults: Cancer, All-Cause Mortality, and Harms

See the literature search flow diagram (Appendix A Figure 1) in the evidence synthesis for a summary of evidence search and selection.

Articles included for Key Questions:

- Key Question 1: 68 (28 studies)
- Key Question 2: 36 (12 studies)
- Key Question 6: 78 (34 studies)

Aspirin Use for the Prevention of Colorectal Cancer

See the literature search flow diagram (Appendix A Figure 1) in the evidence synthesis for a summary of evidence search and selection.

Articles included for Key Questions:

- Key Question 1/3: 39 (16 studies)
- Key Question 4: 45 (16 studies)
- Key Question 5: 15 (4 studies)
- Key Question 7: 32 (15 studies)

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Aspirin for the Primary Prevention of Cardiovascular Events

Two reviewers independently assessed the methodological quality of each study using predefined criteria developed by the U.S. Preventive Services Task Force (USPSTF) and supplemented with the National Institute for Health and Care Excellence methodology checklists for observational studies. Disagreements in quality were resolved by discussion. Each study was given a final quality rating of good, fair, or poor.

Aspirin Use in Adults: Cancer, All-Cause Mortality, and Harms

Two investigators independently assessed the quality of included studies using criteria defined by the USPSTF. The investigators supplemented this process with quality criteria for observational studies using the Newcastle-Ottawa Scale and the Assessment of Multiple Systematic Reviews (AMSTAR) for systematic reviews. They resolved disagreements in quality through discussion.

Aspirin Use for the Prevention of Colorectal Cancer

Two investigators independently and critically appraised the methodological quality of each study that met the inclusion criteria. Quality was assessed using design-specific criteria developed by the USPSTF for randomized control trials (RCTs) and supplemented with Newcastle Ottawa Scales for cohort studies (see Appendix A Table 2 in the evidence synthesis [see the "Availability of Companion Documents" field]). They rated articles as good, fair, or poor quality with respect to internal validity.

Methods Used to Analyze the Evidence

Decision Analysis

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): Systematic evidence reviews were prepared by the Kaiser Permanente Research Affiliates Evidence-based Practice Center for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Aspirin for the Primary Prevention of Cardiovascular Events

Data Extraction and Quality Assessment

One reviewer extracted study-level data into standardized evidence tables, and a second checked data accuracy. Two independent reviewers critically appraised eligible articles using predefined criteria, and a third resolved disagreements.

Data Synthesis and Analysis

The reviewers examined 4 primary beneficial outcomes based on a priori decisions and the availability or consistency of outcome reporting across trials: nonfatal myocardial infarction (MI); nonfatal stroke (all types); cardiovascular disease (CVD) mortality, which was defined as a composite of death due to MI, stroke, and CVD; and all-cause mortality.

Due to the rarity of cardiovascular and all-cause mortality events (>1% but <10%), they used the Mantel–Haenszel fixed-effects model as the primary statistical analysis method. The reviewers assessed statistical heterogeneity using the I^2 statistic.

For estimating absolute risk reduction and exploring potential variability among candidates for aspirin chemoprevention, they calculated absolute effects by simulating control group event rates for the primary outcomes. The reviewers simulated the event rate per 1000 person-years by dividing the number of events for each outcome by the person-years at risk (calculated by multiplying the sample size of the control group by the mean

follow-up years), thereby assuming constant risks over time. The reviewers selected the minimum, median, and maximum event rates (excluding outliers and zeros) for each outcome and calculated the range of expected control event rates after aspirin intervention using the pooled relative risks (RRs) from the included CVD primary prevention trials evaluating aspirin doses of 100 mg or less per day.

Subpopulation Methods

A priori subpopulations included age, sex, diabetes, smoking, race/ethnicity, CVD risk, decreased ankle–brachial index, elevated blood pressure, and elevated lipid levels. The reviewers abstracted subgroup analyses for these groups and considered their credibility based on the timing of planned analysis, interaction testing for heterogeneity of treatment effect, baseline comparability, and control for confounders. To minimize confounding, the reviewers emphasized within-study comparisons over between-study comparisons. They evaluated subgroup analyses qualitatively because those reported were too limited to pool.

Aspirin Use in Adults: Cancer, All-Cause Mortality, and Harms

Data Extraction and Quality Assessment

One investigator abstracted data from the included studies; another checked data for accuracy. The same investigators assessed the quality of included studies using study design-specific criteria defined by the USPSTF and supplemented with Newcastle–Ottawa Scale criteria for cohort studies. Good-quality studies met most criteria and were downgraded to fair if not all criteria were met. Poor-quality studies (those with >40% attrition, >20% attrition between groups, other fatal flaws, cumulative effects of multiple minor flaws, or missing information significant enough to limit confidence in the validity of results) were excluded.

Data Synthesis and Analysis

Aspirin exposure was inferred from the intended dosages and treatment duration in trials, without adjustment for actual adherence because of incomplete reporting. The average intended dose per day was calculated; 325 mg daily or less was defined as low-dose and 100 mg daily or less was defined as very-low-dose. Because harms were often rare, the reviewers explored whether broadening bleeding definitions (that is, any intracranial bleeding vs. hemorrhagic stroke alone) changed the results. The broader definition made little difference, so they focused on hemorrhagic stroke (or intracerebral hemorrhage) results for consistency with an individual-participant data (IPD) meta-analysis and their companion model. The investigators used the Peto odds ratio (OR) for primary statistical analyses because of rare events (that is, a control group event rate <1%) and repeated analyses using the Mantel–Haenszel OR; in both methods, they used a 0.5 continuity correction with no major differences in results (see Appendix Table 1 in the systematic review [see the "Availability of Companion Documents" field]). They stratified results by population (primary prevention of CVD, secondary prevention of CVD, and colorectal cancer prevention) and conducted sensitivity analyses by dose, frequency, and duration of therapy. They also examined data by relevant a priori subgroups: age, sex, race/ethnicity, comorbidities (diabetes, liver disease, ulcer disease, and previous gastrointestinal [GI] bleeding), and concurrent medication use (selective serotonin reuptake inhibitors and nonaspirin nonsteroidal anti-inflammatory drugs [NSAIDs]). Some subgroup analyses (for example, proton-pump inhibitor or statin use) were not specified a priori. Other aspirin-related harms (for example, age-related macular degeneration and ulcers) were addressed in their full report.

The investigators calculated absolute treatment effects for bleeding outcomes to represent the range of control group event rates from the CVD primary prevention trials about aspirin use. For each trial, they divided the number of events for each outcome by the person-years at risk (approximated by multiplying the number of participants in the control group by the mean years of follow-up), assuming a constant risk over time. On the basis of the minimum, median, and maximum event rates (excluding outliers and zeros) for each outcome, they calculated a range of expected event rates after aspirin intervention using the pooled relative risks (RRs) from the included CVD primary prevention trials evaluating aspirin doses of 100 mg daily or less. Excess cases were calculated by subtracting the event rate per 1000 person-years for aspirin users from event rates in the control groups for each risk level. The investigators contrasted excess cases based on control group event rates from trials with results based on control group bleeding rates from the largest cohort study.

Aspirin for the Prevention of Colorectal Cancer

Data Extraction and Quality Assessment

Pairs of investigators independently assessed the quality of included studies by using USPSTF criteria and supplemented the quality criteria for systematic reviews with AMSTAR (A Measurement Tool to Assess Systematic Reviews). Good-quality studies met the majority of criteria. Fair-quality studies did not meet or did not clearly meet all criteria for a good-quality study.

The investigators excluded outcomes from 20 articles from the total cancer review and none from the colorectal cancer (CRC) review due to poor quality (>40% attrition, >10% difference in attrition between groups, other fatal flaws, or multiple minor flaws or missing information important enough to limit confidence in the validity of results). One investigator abstracted data from included studies, and another checked the data for

accuracy.

Data Synthesis and Analysis

For total cancer, the investigators focused on results from CVD primary prevention trials included in their companion reports for consistency, but they included a broader set of studies in sensitivity analyses. For CRC, the investigators analyzed CVD primary and secondary prevention studies together; they present results stratified by follow-up period after initiation of aspirin therapy (early- onset: 0 to 10 years; late-onset: 10 to 20 years; long-term: 0 to ≥20 years) because of apparent large differences in effect by time since initiation. They planned analyses of dose, frequency, duration, formulation, and recency of use a priori and selected cut points empirically. For consistency with the CVD prevention review, they classified aspirin use by dose (high-dose: >325 mg/d; low-dose: ≤325 mg/d; very-low-dose: ≤100 mg/d). If duration was not reported, we used mean in-trial length of follow-up to represent the intended duration of aspirin use, and the term "duration" in the text refers to this concept.

The investigators used the Mantel–Haenszel fixed-effects model to estimate effects when combining studies. They explored prespecified subgroups of interest, including age, sex, race/ethnicity, baseline cancer risk (family history and other cancer risk factors), and diabetes status. They were unable to pool results because of the limited number of contributing studies. They used Stata 12.0 (StataCorp) for all statistical analyses.

Refer to the decision analysis report (see the "Availability of Companion Documents" field) for additional information.

Methods Used to Formulate the Recommendations

Balance Sheets

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The U.S. Preventive Services Task Force (USPSTF) systematically reviews the evidence concerning both the benefits and harms of widespread implementation of a preventive service. It then assesses the certainty of the evidence and the magnitude of the benefits and harms. On the basis of this assessment, the USPSTF assigns a letter grade to each preventive service signifying its recommendation about provision of the service (see table below). An important, but often challenging, step is determining the balance between benefits and harms to estimate "net benefit" (that is, benefits minus harms).

U.S. Preventive Services Task Force Recommendation Grid*

Certainty of Net Benefit	Magnitude of Net Benefit			
	Substantial	Moderate	Small	Zero/Negative
High	A	B	C	D
Moderate	B	B	C	D
Low	Insufficient			

**A*, *B*, *C*, *D*, and *I (Insufficient)* represent the letter grades of recommendation or statement of insufficient evidence assigned by the USPSTF after assessing certainty and magnitude of net benefit of the service (see the "Rating Scheme for the Strength of the Recommendations" field).

The overarching question that the USPSTF seeks to answer for every preventive service is whether evidence suggests that provision of the service would improve health outcomes if implemented in a general primary care population. For screening topics, this standard could be met by a large randomized controlled trial (RCT) in a representative asymptomatic population with follow-up of all members of both the group "invited for screening" and the group "not invited for screening."

Direct RCT evidence about screening is often unavailable, so the USPSTF considers indirect evidence. To guide its selection of indirect evidence, the Task Force constructs a "chain of evidence" within an analytic framework. For each key question, the body of pertinent literature is critically appraised, focusing on the following 6 questions:

1. Do the studies have the appropriate research design to answer the key question(s)?
2. To what extent are the existing studies of high quality? (i.e., what is the internal validity?)
3. To what extent are the results of the studies generalizable to the general U.S. primary care population and situation? (i.e., what is the

external validity?)
4. How many studies have been conducted that address the key question(s)? How large are the studies? (i.e., what is the precision of the evidence?)
5. How consistent are the results of the studies?
6. Are there additional factors that assist the USPSTF in drawing conclusions (e.g., presence or absence of dose–response effects, fit within a biologic model)?

The next step in the USPSTF process is to use the evidence from the key questions to assess whether there would be net benefit if the service were implemented. In 2001, the USPSTF published an article that documented its systematic processes of evidence evaluation and recommendation development. At that time, the USPSTF's overall assessment of evidence was described as good, fair, or poor. The USPSTF realized that this rating seemed to apply only to how well studies were conducted and did not fully capture all of the issues that go into an overall assessment of the evidence about net benefit. To avoid confusion, the USPSTF has changed its terminology. Whereas individual study quality will continue to be characterized as good, fair, or poor, the term *certainty* will now be used to describe the USPSTF's assessment of the overall body of evidence about net benefit of a preventive service and the likelihood that the assessment is correct. Certainty will be determined by considering all 6 questions listed above; the judgment about certainty will be described as high, moderate, or low.

In making its assessment of certainty about net benefit, the evaluation of the evidence from each key question plays a primary role. It is important to note that the USPSTF makes recommendations for real-world medical practice in the United States and must determine to what extent the evidence for each key question—even evidence from screening RCTs or treatment RCTs—can be applied to the general primary care population. Frequently, studies are conducted in highly selected populations under special conditions. The USPSTF must consider differences between the general primary care population and the populations studied in RCTs and make judgments about the likelihood of observing the same effect in actual practice.

It is also important to note that one of the key questions in the analytic framework refers to the potential harms of the preventive service. The USPSTF considers the evidence about the benefits and harms of preventive services separately and equally. Data about harms are often obtained from observational studies because harms observed in RCTs may not be representative of those found in usual practice and because some harms are not completely measured and reported in RCTs.

Putting the body of evidence for all key questions together as a chain, the USPSTF assesses the certainty of net benefit of a preventive service by asking the 6 major questions listed above. The USPSTF would rate a body of convincing evidence about the benefits of a service that, for example, derives from several RCTs of screening in which the estimate of benefits can be generalized to the general primary care population as "high" certainty (see the "Rating Scheme for the Strength of Recommendations" field). The USPSTF would rate a body of evidence that was not clearly applicable to general practice or has other defects in quality, research design, or consistency of studies as "moderate" certainty. Certainty is "low" when, for example, there are gaps in the evidence linking parts of the analytic framework, when evidence to determine the harms of treatment is unavailable, or when evidence about the benefits of treatment is insufficient. Table 4 in the methodology document listed below (see the "Availability of Companion Documents" field) summarizes the current terminology used by the USPSTF to describe the critical assessment of evidence at all 3 levels: individual studies, key questions, and overall certainty of net benefit of the preventive service.

Sawaya GF, Guirguis-Blake J, LeFevre M, Harris R, Petitti D; U.S. Preventive Services Task Force. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. Ann Intern Med. 2007;147:871-875. [5 references].

I Statements

For I statements, the USPSTF has a plan to commission its Evidence-based Practice Centers (EPCs) to collect information in 4 domains pertinent to clinical decisions about prevention and to report this information routinely. This plan is described in the paper: Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. Ann Intern Med. 2009;150:199-205. www.annals.org .

The first domain is potential preventable burden of suffering from the condition. When evidence is insufficient, provision of an intervention designed to prevent a serious condition (such as dementia) might be viewed more favorably than provision of a service designed to prevent a condition that does not cause as much suffering (such as rash). The USPSTF recognized that "burden of suffering" is subjective and involves judgment. In clinical settings, it should be informed by patient values and concerns.

The second domain is potential harm of the intervention. When evidence is insufficient, an intervention with a large potential for harm (such as major surgery) might be viewed less favorably than an intervention with a small potential for harm (such as advice to watch less television). The USPSTF again acknowledges the subjective nature and the difficulty of assessing potential harms: for example, how bad is a "mild" stroke?

The third domain is cost—not just monetary cost, but opportunity cost, in particular the amount of time a provider spends to provide the service,

the amount of time the patient spends to partake of it, and the benefits that might derive from alternative uses of the time or money for patients, clinicians, or systems. Consideration of clinician time is especially important for preventive services with only insufficient evidence because providing them could "crowd out" provision of preventive services with proven value, services for conditions that require immediate action, or services more desired by the patient. For example, a decision to routinely inspect the skin could take up the time available to discuss smoking cessation, or to address an acute problem or a minor injury that the patient considers important.

The fourth domain is current practice. This domain was chosen because it is important to clinicians for at least 2 reasons. Clinicians justifiably fear that not doing something that is done on a widespread basis in the community may lead to litigation. More important, addressing patient expectations is a crucial part of the clinician–patient relationship in terms of building trust and developing a collaborative therapeutic relationship. The consequences of not providing a service that is neither widely available nor widely used are less serious than not providing a service accepted by the medical profession and thus expected by patients. Furthermore, ingrained care practices are difficult to change, and efforts should preferentially be directed to changing those practices for which the evidence to support change is compelling.

Although the reviewers did not explicitly recognize it when these domains were chosen, the domains all involve consideration of the potential consequences—for patients, clinicians, and systems—of providing or not providing a service. Others writing about medical decision making in the face of uncertainty have suggested that the consequences of action or inaction should play a prominent role in decisions.

Rating Scheme for the Strength of the Recommendations

What the United States Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as: • The number, size, or quality of individual studies

Level of Certainty	Description
	• Inconsistency of findings across individual studies • Limited generalizability of findings to routine primary care practice • Lack of coherence in the chain of evidence As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: • The limited number or size of studies • Important flaws in study design or methods • Inconsistency of findings across individual studies • Gaps in the chain of evidence • Findings not generalizable to routine primary care practice • A lack of information on important health outcomes More information may allow an estimation of effects on health outcomes.

Cost Analysis

The U.S. Preventive Services Task Force (USPSTF) does not consider the costs of providing a service in this assessment.

Method of Guideline Validation

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Peer Review

Before the U.S. Preventive Services Task Force (USPSTF) makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center (EPC) and the Agency for Healthcare Research and Quality (AHRQ) send the draft evidence review to 4 to 6 external experts and to Federal agencies and professional and disease-based health organizations with interests in the topic. The experts are asked to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. The draft evidence review is also posted on the USPSTF Web site for public comment. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the USPSTF in memo form. In this way, the USPSTF can consider these external comments before it votes on its recommendations about the service. Draft recommendation statements are then circulated for comment among reviewers representing professional societies, voluntary organizations, and Federal agencies, as well as posted on the USPSTF Web site for public comment. These comments are discussed before the final recommendations are confirmed.

Response to Public Comment

A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 15 September 2015 to 12 October 2015. Many comments requested clarification about initiating and continuing aspirin use, especially for persons in their 60s and 70s. The USPSTF added language throughout the recommendation statement to clarify its focus on initiating aspirin use and enhanced the "Implementation" section to provide guidance on continuing aspirin use. Several comments asked for clarification on the use of aspirin to prevent colorectal cancer (CRC) in persons who are not at increased cardiovascular disease (CVD) risk. The USPSTF clarified that its recommendation is based on the combined benefit of CVD and CRC reduction, and only at 10-year CVD risk levels of 10% or greater is there certainty that the benefits exceed the harms of low-dose aspirin use. Several comments found the tables difficult to interpret or asked to include additional age and risk levels. The USPSTF considered other presentations of the data, but the tables represent the results from the decision analysis model that are most relevant to its estimation of net benefits. Therefore, the tables only include the age and sex ranges for which the USPSTF found moderate certainty of small or moderate net benefit. More detailed tables can be found in the decision analysis report (see the "Availability of Companion Documents" field).

Comparison with Guidelines from Other Groups

Recommendations for screening from the following groups were discussed: the American Heart Association (AHA), the American Stroke Association, the American Diabetes Association, the American Academy of Family Physicians, the American College of Chest Physicians, the American Gastroenterological Association, and the National Comprehensive Care Network.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

The U.S. Preventive Services Task Force (USPSTF) found adequate evidence that aspirin use to reduce risk for cardiovascular events (nonfatal myocardial infarction [MI] and stroke) in adults aged 50 to 69 years who are at increased cardiovascular disease (CVD) risk is of moderate benefit. The magnitude of benefit varies by age and 10-year CVD risk.

The USPSTF found adequate evidence that aspirin use reduces the incidence of colorectal cancer (CRC) in adults after 5 to 10 years of use.

The USPSTF found inadequate evidence that aspirin use reduces risk for CVD events in adults who are at increased CVD risk and are younger than 50 years or older than 69 years.

Potential Harms

The U.S. Preventive Services Task Force (USPSTF) found adequate evidence that aspirin use in adults increases the risk for gastrointestinal (GI) bleeding and hemorrhagic stroke. The USPSTF determined that the harms vary but are small in adults aged 59 years or younger and small to moderate in adults aged 60 to 69 years. The USPSTF found inadequate evidence to determine the harms of aspirin use in adults aged 70 years or older.

Qualifying Statements

Qualifying Statements

- The U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific clinical preventive services for patients without obvious related signs or symptoms.
- It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF does not consider the costs of providing a service in this assessment.
- The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision making to the specific patient or situation. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.
- Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an off¯cial position of the Agency for Healthcare Research and Quality (AHRQ) or the U.S. Department of Health and Human Services (DHHS).

Implementation of the Guideline

Description of Implementation Strategy

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the USPSTF will make all its products available through its Web site . The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access USPSTF materials and adapt them for their local needs. Online access to USPSTF products also opens up new possibilities for the appearance of the annual, pocket-size *Guide to Clinical Preventive Services*.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals, and test results are not always centralized.

Implementation Tools

Mobile Device Resources

Patient Resources

Pocket Guide/Reference Cards

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

U.S. Preventive Services Task Force. Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2016 Jun 21;164(12):836-45. [38 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016 Jun 21

Guideline Developer(s)

U.S. Preventive Services Task Force - Independent Expert Panel

Guideline Developer Comment

The U.S. Preventive Services Task Force (USPSTF) is a federally-appointed panel of independent experts. Conclusions of the USPSTF do not necessarily reflect policy of the U.S. Department of Health and Human Services or its agencies.

Source(s) of Funding

The U.S. Preventive Services Task Force (USPSTF) is an independent, voluntary body. The U.S. Congress mandates that the Agency for Healthcare Research and Quality (AHRQ) support the operations of the USPSTF.

Guideline Committee

U.S. Preventive Services Task Force (USPSTF)

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*Members of the Task Force at the time this recommendation was finalized. For a list of current Task Force members, go to https://www.uspreventiveservicestaskforce.org/Page/Name/our-members.

Financial Disclosures/Conflicts of Interest

The U.S. Preventive Services Task Force (USPSTF) has an explicit policy concerning conflict of interest. All members disclose at each meeting if they have a significant financial, professional/business, or intellectual conflict for each topic being discussed. USPSTF members with conflicts may be recused from discussing or voting on recommendations about the topic in question.

Disclosures

Authors have disclosed no conflicts of interest. Authors followed the policy regarding conflicts of interest described at https://www.uspreventiveservicestaskforce.org/Page/Name/conflict-of-interest-disclosures. Forms can be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M16-0577.

Guideline Status

This is the current release of the guideline.

This guideline updates previous versions: U.S. Preventive Services Task Force. Aspirin for the prevention of cardiovascular disease: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2009 Mar 17;150(6):396-404.

U.S. Preventive Services Task Force. Routine aspirin or nonsteroidal anti-inflammatory drugs for the primary prevention of colorectal cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2007 Mar 6;146(5):361-4. [33 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the Annals of Internal Medicine Web site.

Availability of Companion Documents

The following are available:

Evidence Reviews:

- Guirguis-Blake JM, Evans CV, Senger CA, O'Connor EA, Whitlock EP. Aspirin for the primary prevention of cardiovascular events: a systematic evidence review for the U.S. Preventive Services Task Force. Ann Intern Med. 2016 Jun 21;164(12):804-13.
- Guirguis-Blake JM, Evans CV, Senger CA, Rowland MG, O'Connor EA, Whitlock EP. Aspirin for the primary prevention of cardiovascular events: a systematic evidence review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 131. AHRQ Publication No. 13-05195-EF-1. Rockville (MD): Agency for Healthcare Research and Quality (US); 2015 Sep. 170 p.
- Whitlock EP, Burda BU, Williams SB, Guirguis-Blake JM, Evans CV. Bleeding risks with aspirin use for primary prevention in adults: a systematic review for the U.S. Preventive Services Task Force. Ann Intern Med. 2016 Jun 21;164(12):826-35.
- Whitlock EP, Williams SB, Burda BU, Feightner A, Beil T. Aspirin use in adults: cancer, all-cause mortality, and harms: a systematic evidence review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 132. AHRQ Publication No. 13-05193-EF-1. Rockville (MD): Agency for Healthcare Research and Quality (US); 2015 Sep. 217 p.
- Chubak J, Whitlock EP, Williams SB, Kamineni A, Burda BU, Buist DSM, Anderson ML. Aspirin for the prevention of cancer incidence and mortality: systematic evidence reviews for the U.S. Preventive Services Task Force. Ann Intern Med. 2016 Jun 21;164(12):814-25.
- Chubak J, Kamineni A, Buist DSM, Whitlock EP, Anderson ML. Aspirin use for the prevention of colorectal cancer: an updated systematic evidence review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 133. AHRQ Publication No. 15-05228-EF-1. Rockville (MD): Agency for Healthcare Research and Quality (US); 2015 Sep. 127 p.
- Dehmer SP, Maciosek MV, Flottemesch TJ, LaFrance AB, Whitlock EP. Aspirin for the primary prevention of cardiovascular disease and colorectal cancer: a decision analysis for the U.S. Preventive Services Task Force. Ann Intern Med. 2016 Jun 21;164(12):777-86.
- Dehmer SP, Maciosek MV, Flottemesch TJ. Aspirin use to prevent cardiovascular disease and cancer: a decision analysis. AHRQ Publication No. 15-05229-EF-1. Rockville (MD): Agency for Healthcare Research and Quality (US); 2015 Sep. 99 p.

Available from the U.S. Preventive Services Task Force Web site.

Background Articles:

- Barton MB et al. How to read the new recommendation statement: methods update from the U.S. Preventive Services Task Force. Ann Intern Med 2007;147:123-7.
- Guirguis-Blake J et al. Current processes of the U.S. Preventive Services Task Force: refining evidence-based recommendation development. Ann Intern Med 2007;147:117-22.
- Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. Ann Intern Med 2007;147:871-5.
- Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. Ann Intern Med. 2009;150:199-205.

Available from the USPSTF Web site.

The following are also available:

- Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer: clinical summary. Rockville (MD): U.S. Preventive Services Task Force. 2016 Apr. 1 p. Available from the USPSTF Web site.
- A continuing medical education (CME) activity is available from the Annals of Internal Medicine Web site.

The Electronic Preventive Services Selector (ePSS) is an application designed to provide primary care clinicians and health care teams timely decision support regarding appropriate screening, counseling, and preventive services for their patients. It is based on the current, evidence-based recommendations of the USPSTF and can be searched by specific patient characteristics, such as age, sex, and selected behavioral risk factors.

Patient Resources

The following is available:

- Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer. Understanding task force recommendations. Rockville (MD): U.S. Preventive Services Task Force (USPSTF); 2016 Apr. 4 p. Available from the USPSTF Web site.
- Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer. Summaries for patients. Ann Intern Med. 2016 Jun;164(12):I-22. Available from the Annals of Internal Medicine Web site.

Myhealthfinder is a tool that provides personalized recommendations for clinical preventive services specific to the user's age, gender, and pregnancy status. It features evidence-based recommendations from the USPSTF and is available at www.healthfinder.gov.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

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